

REMARKS

In response to the Office Action dated September 25, 2006, claims 1, 61, and 90 have been amended. Therefore, claims 1-40, 61, and 90 remain in the case. In light of the amendments and arguments set forth herein, reexamination and reconsideration of the application are requested.

Section 101 Rejections

The Office Action rejected claims 1-4, 20-40, 61, and 90 under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. With regard to claims as being unpatentable over Naoi et al. (U.S. Patent No. 6,104,833). More specifically, the Office Action maintained that Naoi et al. disclose each and every feature of the Applicants' invention, either explicitly or implicitly.

With regard to claims 1-4, 20-40, and 61, the Office Action stated that "the claimed invention fails to produce a tangible result. The claimed invention as a whole must accomplish a practical application. That is, it must produce a '*useful, concrete and tangible result*.'" Further, the Office Action stated that the "Applicant's claims . . . fail to describe a tangible result of the paginating operation. Storing, determining, laying out, evaluating, calculating and choosing are abstract ideas manipulated within the internal structure of the computing device, and therefore are not patentable. However, claim 5 is directed toward a tangible result. Claim 5 incorporates a user display, to display output to a user, which is a tangible result of the invention."

In response, the Applicants have amended independent claim 1 such that amended claim 1 now recites the tangible result of displaying an output to a user. Applicants have also amended independent claims 61 and 90 to includes the tangible result of "an adaptive grid-based document . . . that is displayed to a user."

Accordingly, the Applicants respectfully submit that amended independent claims 1, 61, and 90 are patentable under 35 U.S.C. § 101 based on the amendments to claims 1, 61, and 90 and the legal and technical arguments set forth above and below. Moreover,

claims 2-4 and 30-40 depend from amended independent claim 1 and also contain patentable subject matter (MPEP § 2143.03). The Applicants, therefore, respectfully request reexamination, reconsideration and withdrawal of the rejection of claims 1-4, 20-40, 61, and 90 under 35 U.S.C. § 101.

With regard to claim 90, the Office Action stated that “the specification defines a computer readable medium as also encompassing a signal . . . [and therefore] does not limit itself to statutory embodiments, because a signal embodying that same functional descriptive material is neither a process nor a product (i.e., a tangible ‘thing’) and therefore does not fall within one of the four statutory classes of § 101. Rather, a ‘signal’ is a form of energy, in the absence of any physical structure or tangible material.

In response, the Applicants have amended independent claim 90 to recite a “computer-readable *storage* medium having *stored thereon* computer-executable instructions”. As stated in the Applicants’ specification, “computer-readable media may comprise computer *storage media* and communication media. Computer storage media includes both volatile and nonvolatile, removable and non-removable media implemented in any method or technology for storage of information such as computer-readable instructions, data, data structures, program modules, programs, programming, or routines. Computer storage media includes, but is not limited to, RAM, ROM, EEPROM, flash memory or other memory technology, CD-ROM, digital versatile disks (DVD) or other optical disk storage, magnetic cassettes, magnetic tape, magneto-optical storage devices, magnetic disk storage or other magnetic storage devices, or any other medium which may be used to store the desired information and which may be accessed by computer system 210” (specification, page 11, lines 19-28; emphasis added). Thus, the computer storage medium is a tangible product or thing.

Accordingly, the Applicants respectfully submit that amended independent claim 90 is patentable under 35 U.S.C. § 101 based on the amendment to claim 90 and the legal and technical arguments set forth above and below. The Applicants, therefore, respectfully request reexamination, reconsideration and withdrawal of the rejection of claim

90 under 35 U.S.C. § 101.

Section 112, First Paragraph Rejections

The Office Action rejected claims 1-40, 61, and 90 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. In particular, the Office Action stated that independent claims 1, 61, and 90 “are directed toward ‘determining a score that is a measure of how well document content fits a template’ (claim 1) and ‘evaluating a template score variable of the template using the portion of document content’ (claims 61 and 90).” The Office Action, however, maintained that the “specification is silent as to how a score is determined.”

In response, the Applicants respectfully traverse these rejections. In general, the Applicants submit that the specification does enable one having ordinary skill in the art to make and/or use the invention. Specifically, the Applicants’ specification states that:

“The template authoring tool 121 may then automatically construct a scoring function that the layout engine 112 evaluates for different selections of document content 106 that may possibly be flowed into the element. Given the user-specified ranking of attributes in order of importance, the template authoring tool 121 may associate each attribute with a digit in the score, with higher order digits corresponding to more important attributes. When the layout engine 112 evaluates a selection of content, the score may be computed by associating a “1” with all matching attributes, and a “0” with all non-matching attributes. More specifically, if “a1” through “aN” are the N user-specified attribute preferences in order of importance, then the scoring function is constructed by the authoring system as follows: $S = \text{match}(a_1, b_1) \cdot (10^{(N-1)}) + \text{match}(a_2, b_2) \cdot (10^{(N-2)}) + \dots + \text{match}(a_N, b_N) \cdot (10^0)$, where S is the quality score of a particular selection of content being evaluated, b1 through bN are the actual attribute values associated with the selection of content, and $\text{match}(a, b)$ is a function that returns “1” when “a” equals “b” and “0” otherwise. Thus, this scoring function returns a better or worse score, depending on how well the content matches the attributes specified

by the user. The scoring function ensures that more important attributes are given strict priority over less important attributes. For example and not limitation, a selection of content that matches a particular attribute “A” results in a better score than other selections of content that do not match attribute “A” but potentially do match less important attributes” (specification, page 8, lines 27-31 to page 9, lines 1-13; emphasis added).

In addition, the specification notes that:

“One skilled in the art will recognize that scoring functions may be implemented in a variety of ways. For example and not limitation, each attribute of an element may be associated with a digit in the final score. The importance of the attribute determines its corresponding digit, with the most important attribute being associated with the most significant digit. Consequently, an attribute that is the *k-th* most important attribute will correspond with the *k-th* most significant digit in the final score. For a particular selection of content, the scoring function may associate a “1” with the digits that correspond to matching attributes and a “0” with the digits that correspond to non-matching attributes. The scoring function, therefore, ensures that a piece of content that matches the most important attribute has a higher (i.e., better) score than any other selection of content that does not match the most important attribute” (specification, page 9, lines 14-23; emphasis added).

Based on the above arguments, the Applicants submit that the specification does enable one having ordinary skill in the art to “determine a score”, as claimed in independent claims 1, 61, and 90. Accordingly, the Applicants respectfully submit that amended independent claims 1, 61, and 90 are patentable under 35 U.S.C. § 112, first paragraph, based on the amendments to claims 1, 61, and 90 and the legal and technical arguments set forth above and below. Moreover, claims 2-4 and 30-40 depend from amended independent claim 1 and also contain patentable subject matter (MPEP § 2143.03). The Applicants, therefore, respectfully request reexamination, reconsideration

and withdrawal of the rejection of claims 1-4, 20-40, 61, and 90 under 35 U.S.C. § 112, first paragraph.

Section 112, Second Paragraph Rejections

The Office Action rejected claims 1-40 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. In particular, the Office Action stated that for independent claim 1, “the actual components of the system do not form a nexus with the recited preamble, as a grid-based document layout system is not a result of the claimed invention.”

In response, the Applicants have amended claim 1 such that the preamble recites a “system for facilitating adaptive grid-based document layout” and the result is a user interface that displays “the modified templates in the adaptive grid-based document layout to a user.” Based on this amendment to claim 1, the Applicants respectfully submit that amended independent claim 1 is patentable under 35 U.S.C. § 112, second paragraph. Moreover, claims 2-40 depend from amended independent claim 1 and also contain patentable subject matter (MPEP § 2143.03).

The Office Action also stated that for independent claim 1 “the term ‘*desirable*’ is a relative term, which renders the claim indefinite. The term ‘*desirable*’ is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.”

In response, the Applicants have amended claim 1 to delete the term “desirable”. Based on this amendment to claim 1, the Applicants respectfully submit that amended independent claim 1 is patentable under 35 U.S.C. § 112, second paragraph. Moreover, claims 2-40 depend from amended independent claim 1 and also contain patentable subject matter (MPEP § 2143.03). The Applicants, therefore, respectfully request

reexamination, reconsideration and withdrawal of the rejection of claims 1-40 under 35 U.S.C. § 112, second paragraph.

Section 102(e) Rejections

The Office Action rejected claims 1-40, 61, and 90 under 35 U.S.C. § 102(e) as being anticipated by Salesin et al. (U.S. Patent Application 2003/0229845). The Office Action stated that Salesin et al. disclose all the elements or features of the Applicants' claimed invention. In response, the Applicants respectfully traverse these rejections based on the amendments to claims 1, 61, and 90, and the following legal and technical analysis.

In particular, the Applicants submit that Salesin et al. are missing at least one feature of the Applicants' claimed invention. In particular, Salesin et al. do not disclose, either explicitly or implicitly, the material claimed feature of using the quality score to influence a choice of an optimal pagination of the sequence of templates for paginating all document content by measuring an effectiveness of different variations of the sequence templates.

Amended Independent Claims 1, 61, 90

Amended independent claim 1 of the Applicants claimed invention includes a system for facilitating adaptive grid-based document layout. The system includes a template storage unit adapted to store a plurality of templates, and a layout engine adapted to apply document content to a template of said plurality of templates, wherein said layout engine is further adapted to determine a score providing a measure of how well said document content fits said template. The system also includes a paginator adapted to provide said document content and said plurality of templates to said layout engine, receive said quality score from said layout engine, and use the quality score, document content and said plurality of templates to find an optimal pagination of the plurality of templates by measuring an effectiveness of various sequences of the plurality of templates, and an adaptive grid-based document generated by using the layout engine to format the document content according to the optimal pagination of the plurality of templates and displaying the document to a user.

Amended independent claim 61 of the Applicants claimed invention includes a method for determining a sequence of templates for document layout. The method includes laying out a portion of document content using a template, evaluating a template score variable of the template using the portion of document content, determining a number of widows and orphans in page layout resulting from application of the template to document content, and calculating a quality score of the template based on the template score variable and the determined number of widows and orphans. The method also includes using the quality score to influence a choice of an optimal pagination of the sequence of templates for paginating all document content by measuring an effectiveness of different variations of the sequence templates to generate an adaptive grid-based document, and displaying the adaptive grid-based document to a user.

Amended independent claim 90 of the Applicants claimed invention includes a computer-readable storage medium having stored thereon computer-executable instructions for determining a sequence of templates for document layout. The instructions include laying out a portion of document content using a template, evaluating a template score variable of the template using the portion of document content, determining a number of widows and orphans in page layout resulting from application of the template to document content, and calculating a quality score of the template based on the template score variable and the determined number of widows and orphans. The instructions further include using the quality score to influence a choice of an optimal pagination of the sequence of templates for paginating all document content by measuring an effectiveness of different variations of the sequence templates to generate an adaptive grid-based document, and displaying the adaptive grid-based document to a user.

The invention computes a “globally optimal sequence of templates 306 based on the quality scores provided by the layout engine 112” (specification, page 7, lines 9-10). Then, the “layout engine 112 automatically formats the document content 106 according to the optimal sequence of templates 306” (specification, page 7, lines 12-14). Based on this optimal sequence of templates, each the layout engine can choose how to best format

each page of the document based on its context. This provides a flexible and powerful layout model while removing any need to embed particular layout information in the document itself.

“In order to find an optimal pagination, the paginator 109 must measure the effectiveness of each sequence of valid templates 306” (specification, page 26, lines 12-13). The optimal pagination is found by using a “measure [that] is maximized by a systematic or heuristic search or by a constraint optimization” (specification, page 26, lines 13-15). Thus, the Applicants’ claimed invention finds an optimal pagination for a sequence of templates that is the best layout for the content by measuring an effectiveness of having each page template in different orders.

In contrast, Salesin et al. merely disclose a system that associates a layout format with a document and, based on the desired format, selects between multiple versions of content in order to fit that format. While it is true that Salesin et al. use multiple XSL templates, they do not find an optimal pagination for templates by trying different ordering of templates.

Rather, Salesin et al. selects a desired layout of a document and then lays out the document according to the format. For content with multiple versions, the version that best fits in with the current layout is used. Thus, the various versions of content are cycled through in a desired layout format. In contrast, the Applicants’ claimed invention chooses from a multitude of different layout options and, for each page and selection of content, selects the best layout to use for that page of content.

The Applicants, therefore, respectfully traverse this rejection of amended independent claims 1, 61, and 90 because Salesin et al. do not teach, either explicitly or implicitly, the material claimed feature of using the quality score to influence a choice of an optimal pagination of the sequence of templates for paginating all document content by measuring an effectiveness of different variations of the sequence templates.


Because the Applicants' claimed invention includes at least one feature neither explicitly disclosed nor suggested by Salesin et al., the Applicants respectfully submit that the rejections of amended independent claims 1, 61, and 90 under 35 U.S.C. § 102(e) as being anticipated by Salesin et al. has been overcome. Moreover, rejected claims 2-40 depend from amended independent claim 1 and are therefore also novel over Salesin et al. (MPEP § 2143.03). The Applicants, therefore, respectfully request reexamination, reconsideration and withdrawal of the rejection of claims 1-40, 61, and 90 under 35 U.S.C. § 102(e) as being anticipated by Salesin et al. based on the claim amendments and the arguments above and below.

Conclusion

In view of the amendments to claims 1, 61, and 90, and the arguments set forth above, the Applicants submit that claims 1-40, 61, and 90 are in condition for immediate allowance. The Examiner, therefore, is respectfully requested to withdraw the outstanding rejections of the claims and to pass all of the claims of this application to issue.

In an effort to expedite and further the prosecution of the subject application, the Applicants kindly invite the Examiner to telephone the Applicants' attorney at (805) 278-8855 if the Examiner has any comments, questions or concerns, wishes to discuss any aspect of the prosecution of this application, or desires any degree of clarification of this response.

Respectfully submitted,
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